EQUITY ON COMPULSORY EDUCATION IN CHINA

By

Zhu Baojiang

THESIS

Submitted to

KDI School of Public Policy and Management

in partial fulfillment of the requirements

for the degree of

MASTER OF PUBLIC POLICY

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ABSTRACT

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As a developing country with a large population of 1.25 billion, nowadays, China is also endowed with the largest education scale in the world. Paralleling the pace of miraculous progress of economic growth since the adoption of the policy of reform and opening to the outside world in 1978, education in China has also gained tremendous achievements. The primary education is universal in China now. The rapid development in basic education in China has been recognized worldwide. Although China has made such a rapid growth in education as a whole, development in different area is uneven. Whether the development is in equilibrium or not is an important factor to achieve equity in the compulsory education. Thereby, this paper evaluates the equity through the analysis on the differences of regional educational development in China. Enrolment Ratio, Educational Expenditure per Student and Teacher Quality are used in this paper as indicators to measure the development of education. Five statistical indices, Standard Deviation, Range, Range Rate, Variation Coefficient, and Gini Index, are employed to measure the discrepancy among various areas. The single province is chosen as an analysis unit, and time series is used. The finding is that the unbalanced development of education in different areas is significant, and the difference manifests itself not in the quantity, but in the quality. The gap of economic development among different regions, the lack of investment in compulsory education, and the wrong policy orientation are the main causes. In order to shrink the difference in compulsory education in different areas, and promote the education equity, firstly, the idea of “education equity and the balanced development of compulsory education” should be grounded society wide. Moreover, government at

all levels shoulder responsibility conscientiously, strengthen the input of education further, especially the input of compulsory education. Finally, the policy focus should be adjusted to promote the balanced development and fairness of compulsory education.

Dedicated to my parents

ACKNOWLEDGEMENT

Many people have given their precious time, good thinking and generous support to this paper. At this place, I would like to thank everybody who contributed to this paper. First of all, I want to thank KDI School for giving the opportunity to perform my Master Degree studies. Particularly, I'd like to express my great gratitude to Professor Ju-Ho Lee for his helpful guidance, valuable help and support not only in the course studying but also in the thesis writing, and the indefatigable staff Gi Sang Kim for his kind help and sending the information about KDI School. I also want to show my sincere thanks to my colleagues, who has helped me a lot in data source and thoughtful ideas. Last but not least, I am very grateful to my beloved wife, Mrs. Lin Wang for her understanding and great support.

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1. AEEPS: Average Educational Expenditure per Student
2. ASREPS: Average School-running Expenditure per Student
3. ABAPS: Average Budgetary Allocations per Student
4. ABSREPS: Average Budgetary School-Running Expenditure per Student

I Introduction

As a developing country with a large population of 1.25 billion, nowadays, China is endowed with the largest education scale in the world with about 1,000,000 schools of various types and over 200,000,000 students. During the past 25 years since the reform and opening up, China has accomplished a remarkable achievement in respect of economic development. Paralleling miraculous progress of economic growth, education in China has also gained tremendous achievements. The primary education is universal in China now. By the end of 2002, total enrolment of primary school pupils reached 121.57 million, and the net enrolment rate of primary school age children reached 98.6%, exceeding that of 1980 by 5.6 percentage points. In 2002, total enrolment in general secondary schools rose to 82.88 million, scoring an increase of 50.5% as compared with that in 1980. There were altogether 1396 regular higher education institutions in 2002 with a total enrolment of 9.03 million students, recording an increase of 689.8% as compared with that of 1980, indicating an average annual growth of 31.4%. Great development is fulfilled in the teaching force. Both the scale and the quality of teaching force increased a lot. As a matter of fact, in 2002, there are 5,778,800 primary school teachers and 4,376,300 high school teachers, an increase of 5.1% and 44.9% of that in 1980 respectively. In terms of education background, the proportion of the qualified teachers[1] in primary school, junior high school and senior high school reached 97.4%, 90.4% and 72.9% respectively,

[1] According to "*Teacher Law of the People's Republic of China*" promulgated in 1993, corresponding records of formal schooling for a qualified primary school teacher, junior high school teacher, senior high school teacher, are a graduate of a secondary normal school or upwards; a graduate of a college or university with two or three years' schooling or upwards, a graduate of a college or university with four years' schooling or upwards, respectively.

exceeding that of 1980 by 47.6%, 77.7% and 37.0%. There are 618,419 teachers in average college and university, among which 60,210 are professor, scoring an increase of 155.3%, 1563.3% as compared with 1980, indicating an average annual growth of 7.1%, 71.1%, respectively.

The rapid development in basic education in China has been recognized worldwide. On January 20, 2000, China was considered in Bangkok by Victor Ordonez, Director of the United Nations Educational, Scientific and Cultural Organization (UNESCO) Principal Regional Office for Asia and the Pacific, as a model country in many ways in developing basic education. "*In the past 20 years, China has done the nearly miraculous feat of moving participation in schools from 30 to 40 percent to over 95 percent*," he said after the closing ceremony of the Asia-Pacific Conference on Education for All 2000 Assessment Thursday[2].

Although China has made such a rapid growth in education as a whole, development in different area is uneven, and, lacking of the high quality education resource, there is still a long way to go to meet the educational demands of Chinese people. With the improvement of living standard in China, equity issue gains increasing concern from both the public and the government. Though whether priority should be lay on efficiency or equity is still in debate in academe, achieving equity has become an important goal for many governments, and it often requires more attention than it has received in the past. Education, which is considered as one of fundamental human

[2] Source: *People's Daily*, January 21, 2000

rights, is critical not only for economic growth but also for poverty reduction. Therefore, it is obvious that the issue of equity on education is the most important.

Indeed, the Chinese government has been aware of it for several years, and has made some special efforts to give favorable financial support to school communities in poor areas, as well as the poor students. But so far, the result is not so perfect and satisfying.

How about the equity in terms of compulsory education in China? Is Chinese compulsory education inequitable? What's its trend? Is the inequity declining or ascending? What are the main causes? What should be done in the following years? This paper is trying to answer the above questions.

Generally, equity of education means not only the equal access to education, but also receives the education of equal quality. It is well known that, to great extend, both the quality and the quantity are determined by inputs of resources. So what really matter in making education equitable is how to allot the educational resources as equally as possible to every school and every student, whether the development is in equilibrium or not is an important factor to achieve equity in the compulsory education. Thereby, this paper will evaluate the equity through the analysis on the differences of regional educational development in China. The imbalanced economic development in different areas resulted in the regionally uneven education development. For those economically developed areas in east and south coastal provinces, education investment is sufficient relatively. The expanding regional difference of education

investment, in turn, has accelerated the differentiation in education development. Enrolment Ratio, Educational Expenditure per Student and Teacher Quality are used in this paper as indicators to measure the development of education. As regards the article structure, a statistical description of the differences of educational development in China since its reforms and opening-up policy, together with some valuable conclusions, will be given firstly, then the causes will be examined, and finally reasonable recommendations will be offered.

II Methodology

1. Indicators used in this paper to measure educational development

Educational development includes two sides, quantity and quality. Quantity of education marks the chance to access to education, and quality means the outcome of education. Generally, enrolment ratio is used to measure the quantity of education. So does this paper.

Two typical approaches are usually used to measure the quality of education: the output approach and the input approach. The output approach directly measures the achievement of education by comparing the scores of cognitive performance tests, which the students of the same-age group from various provinces obtained in the same national or international tests on the same subjects. It is ideal but not available in China nowadays. Another way is the input approach, which indirectly measures the quality of education through measuring the resources being inputted into the education systems. Though high volume of inputs does not necessarily mean high

quality, this approach is still widely applied. In this paper, the input approach will be applied. The scale of education between provinces is various, which lead to little comparability between the different inputs in terms of absolute total figures, so some comparable indicators should be adopted. Financial investment and human resources are two of the most critical input factors for education. To a great extent, schooling level of teachers shows the quality of teaching force. In this paper, educational expenditure per student and schooling level ratio of teachers are taken to estimate the quality of education, and enrolment ratio is used to measure the quantity of education directly.

2. Statistical indices used in this paper to analyze the discrepancy

Nowadays there are many statistical indices used to measure the discrepancy among various areas, such as Standard Deviation, Range, Lorenz Curve, Gini Index, Variation Coefficient, and so on. Some of them measure the discrepancy in absolute term, the others in relative term. According to the need of research, this paper chose the following five indices.

1) Standard Deviation

Standard Deviation measures the dispersion of certain aspect of education in absolute term. The following formula is used to calculate the standard deviation.

$$S=\sqrt{\frac{\sum_{i=1}^{N}(y_i-\mu)^2}{N}}$$

Where,

S is the Standard Deviation;

y_i is the value of certain observation;

μ is the mean of the variable Y, equal to $\frac{1}{N}\sum_{i=1}^{N} y_i$;

N is the total number of the observations.

2) Range

Range measures the educational interval between the most advanced area and the most underdeveloped area. It shows the extreme difference in absolute term. The mathematic formula is as following.

R= $y_{\max} - y_{\min}$

Where,

R is the Range, the interval between the largest and smallest values;

$y_{\max}$ is the largest value of observations, same as the value in the most advanced province;

$y_{\min}$ is the smallest value of observations, same as the value in the most undeveloped province.

3) Range Rate

Range Rate measures the extreme difference in relative term. Combining with Range, the extreme difference can be shown more roundly. The formula is as following.

I= $y_{\max} / y_{\min}$

Where,

I is the Range Rate;

$y_{\max}$ is the largest value of observations, same as the value in the most advanced province;

$y_{\min}$ is the smallest value of observations, same as the value in the most undeveloped province.

4) Variation Coefficient

Variation Coefficient measures dispersion of certain aspect of education in relative term. The formula used in this paper is shown as follow.

$$V=\frac{\sqrt{\frac{\sum_{i=1}^{N}(y_i-\mu)^2}{N}}}{\mu}$$

Where,

V is variation coefficient;

y_i is the value of certain observation;

μ is the mean of the variable Y, equal to $\frac{1}{N}\sum_{i=1}^{N} y_i$;

N is the total number of the observations.

5) Gini Index

Gini Index is chosen as a measure of education inequality. There are two ways to calculate an income Gini, the direct method and the indirect method. According to the direct method to calculate an income Gini, this paper uses the following formula to calculate education Gini Index.

$$G=\frac{1}{\mu N(N-1)}\sum_{i=2}^{N}\sum_{j=1}^{i-1}\left|y_i-y_j\right|$$

Where,

G is the education Gini index;

y_i is the value of certain observation;

μ is the mean of the variable Y, equal to $\frac{1}{N}\sum_{i=1}^{N} y_i$;

N is the total number of observations.

3. Analysis Unit and Time Series

There are several ways to analyze the educational difference in China. Nowadays, the most often used way is to divide all the provinces in China into three categories according to the educational development, such as eastern areas, middle areas, and western areas. However, in this paper the single province is chosen as an analysis unit.

The main reasons are as follow. Firstly, as an administration district, province is a system of relatively independent society where politics, economy, and culture are closely correlated with one another. Secondly, increasingly empowered by the central government, the province has gradually become a relatively independent entity. Besides this, the province is also a basic running unit in implementing all kinds of policy made by the central government.

In order to more efficiently grasp the current situation of equity on compulsory education in China, time series is used. The author tried to collect the corresponding data from 1978 when China started the policy of reform and opening-up to 2002 in this paper. Due to the availability of the data sources, some data is from 1984, some is from even later year.

III Assessing the Status of Equity on Compulsory Education in China

1．Access to education

Table 1: Enrolment Ratio of Regular Schools by Level Unit: %

years	Net Enrolment Ratio of Primary Schools	Gross Enrolment Ratio of Junior High Schools	Gross Enrolment Ratio of Senior High Schools
1980	93.0	-	-
1985	95.9	-	-
1989	97.4	-	-
1990	97.8	66.7	-
1991	97.8	69.7	-
1992	97.2	71.8	26.0
1993	97.7	73.1	28.4
1994	98.4	73.8	30.7
1995	98.5	78.4	33.6
1996	98.8	82.4	38.0

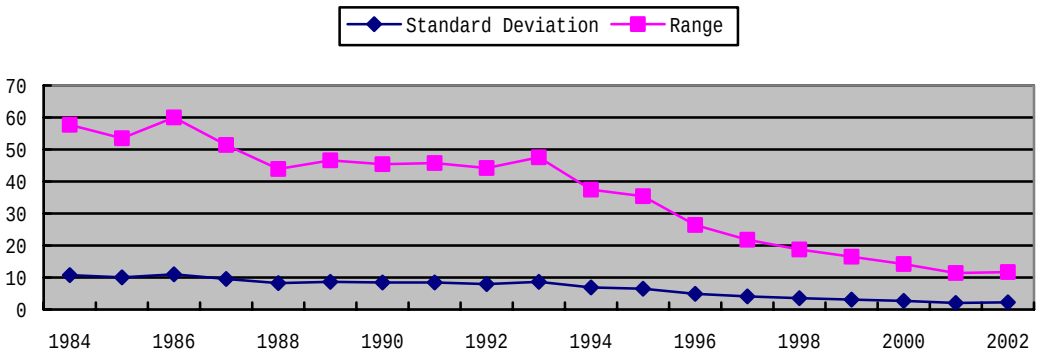
1997	98.9	87.1	40.6
1998	98.9	87.3	40.7
1999	99.1	88.6	41.5
2000	99.1	88.6	42.8
2001	99.1	88.7	42.8
2002	98.6	90.0	42.8

Source: *China Educational Statistics Yearbook of China,* 1990-2002, Department of Planning & Construction, Ministry of Education, P.R.C, Beijing: People's Education Press

Note: Net Enrolment Ratio of school-age children in Primary School before year 1992 was calculated during the age of 7-11. Since 1992, the ratio was calculated according to provincial entrance and primary years.

Equal access to basic education is among the fundamental human rights to which everyone is entitled, and enrolment ratio is usually taken as its most appropriate indicator. As can be seen from the Table 1, net enrolment ratio of primary schools in China as a whole has been high all the time but its growth is slow because the coverage at this level was already extensive for a long time. It increases to 99.1% in 2000 from 93.0% in 1980, and has been over 98.4% since 1994. Gross enrolment rate of junior high school raised progressively from 66.7% in 1990 to 90.0% in 2002. Gross enrolment rate of senior high school raised rapidly from 26.0% in 1992 to 42.8% in 2002. In fact, by 2002, among the 2860 counties in China there were only 431 counties that didn't reach the 9-year compulsory education and the population coverage of compulsory education had achieved 91%. It was estimated that there are about 60 counties that didn't cover the primary education. Meanwhile, the difference of the net enrolment ratio in the compulsory education between various provinces decreased since 1986 when Compulsory Education Law was promulgated in China. Due to the availability of data source, the following analysis will lay its emphasis on the differences of the net enrolment ratio in primary schools.

Figure 1: Statistical Index I--Net Enrolment Ratio of Primary Schools 1984~2002



As can be seen from the Figure 1, the Standard Deviation of net enrolment ratio in primary school was relatively high before 1986. Later on, though a small fluctuation in the process, the overall declining trend is obvious, especially after 1993. The indicator's gradual declining from 11% in 1986 to 2.3% in 2002, shows that the absolute difference in Net Enrolment Ratio of Primary Schools between different provinces is narrowing since 1986,and now the difference is minute.

As shown in Figure 1 and Figure 2, the Range and Range Rate of Net Enrolment Ratio of Primary Schools reflect the same trend as the Standard Deviation show: a overall decline from 1986. The drop in the indicator in 1985 is followed by a rebound in 1986, a drop in 1987 and 1988, and then the limited fluctuation until 1993, and a successive years' decline is observed from 1994 on. The drop in both the Range and Range Rate is sharp, from the 60% and 2.5 in 1986 to the 11.7% and 1.1 in 2002 respectively, which indicate the polarization in the Net Enrolment Ratio of Primary Schools is greatly mitigated or even disappeared.

Figure 2: Statistical Index II -- Net Enrolment Ratio of Primary Schools 1984~2002

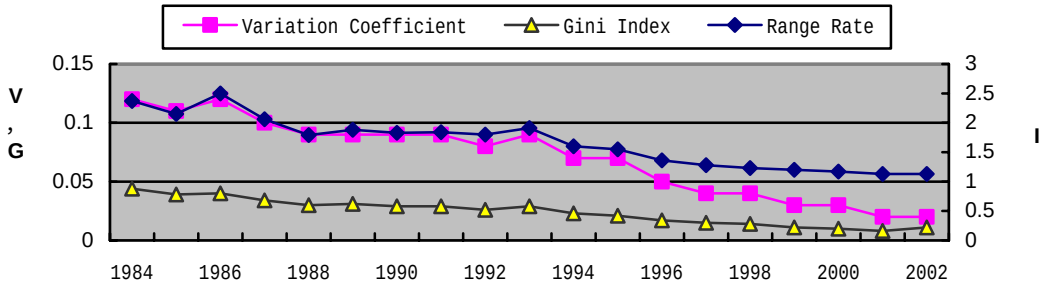


Figure 2 shows how the Variation Coefficient and Gini Index changed during the period from 1984 to 2002. The outline of Variation Coefficient is quite similar with that of Range Rate, and the outline of Gini Index is the same as that of Standard Deviation. From 1984 to 2002, although there are several fluctuations, the decreasing trends are obviously. Particularly, after 1994, both of them decreased year by year until 2001. The drop of the Variation coefficient from 0.12 in 1986 to 0.02 in 2002 indicates that the relative discrepancy of the Enrolment Ratio of Primary Schools in different region has been diminished to a very low level. As an uneven indicator, Gini Index, being in a low plane of 0.044, keeps decreasing in the last 18 years. From 1999 on, Gini index level off in about 0.01, which shows that in different provinces there is equal access to the enrolment of the primary schools, and that there is no clear inequitable problem.

Table 2: Enrolment Ratio of Primary School by Gender

Unit:%

year	Total	Male	Female	Gender Gap
1997	98.90	99.00	98.80	0.20
1998	98.90	99.00	98.90	0.10
1992	97.20	98.20	96.10	2.10
1999	99.10	99.10	99.00	0.10
1993	97.70	98.50	96.80	1.70
2000	99.10	99.14	99.07	0.07
1994	98.40	99.00	97.70	1.30
2001	99.05	99.08	99.01	0.07
1995	98.30	98.90	98.20	0.70
2002	98.58	98.62	98.53	0.09
1996	98.80	99.00	98.60	0.40

Source: *China Educational Statistics Yearbook of China for 2002*, Department of Planning & Construction, Ministry of Education, P.R.C, People's Education Press

In addition, regarding the access to primary school by gender, the gap reduced gradually as time passed by (Table 2). In terms of net enrolment ratio of primary school, gender gap shrank from 2.1% in 1992 to 0.09% in 2002. In fact, gender gap has never been more than 0.1% since 1998. As a result, women's educational level has been greatly improved. "According to statistics, in recent years, improvements in both the length of education and rate of literacy of women aged 15 have been greater than those for men. The gap in the educational levels of the two sexes is also narrowing. In 2000, the average length of education enjoyed by women exceeded 6.5 years, and the gap between adult men and women in this regard narrowed from 1.7 years in 1995 to less than 1.5 years."[3]

By far, a seemingly encouraging conclusion might be drawn that the opportunity of enrolment of primary school in different provinces of China is equipotent, or that from the perspective of access to enrolment, Chinese primary education is charactered by equity. But when take other factors, such as retention rate, promotion rate, and quality of education, etc, into consideration, a different or even opposite conclusion will be reached. The following analysis will be based on the discussion of education quality.

[3] Source: The white paper--*Progress in China's Human Rights Cause in 2000*, the Information Office of the State Council, P.R.C.

2. Financial Input to Education

An important concern for both the government and the individual is the cost of education. Public funding for education is a specific concern for developing countries due to its low incomes. Though high investments don't necessarily mean satisfying outcomes, it is no denying that the development of education is, to a great extend, conditioned by the resources input in education, especially in developing countries. Without sufficient resources for funding, which are the common situation among developing countries, education may continue to be insufficiently supported and the population will continue to fall short of educational standards at the international level. The gross investment in education can't be taken as an indicator to analyze the education input, because the different education scale results in the incomparability.

Only the indexes per student show the character of comparability, so the following four factors, Average Educational Expenditure per Student(AEEPS)、 Average School-Running Expenditure per Student(ASREPS)、Average Budgetary Allocations per Student(ABAPS)， Average Budgetary School-Running Expenditure per Student(ABSREPS)[4], are taken as the indicators to describe the different level of the education input in different provinces.

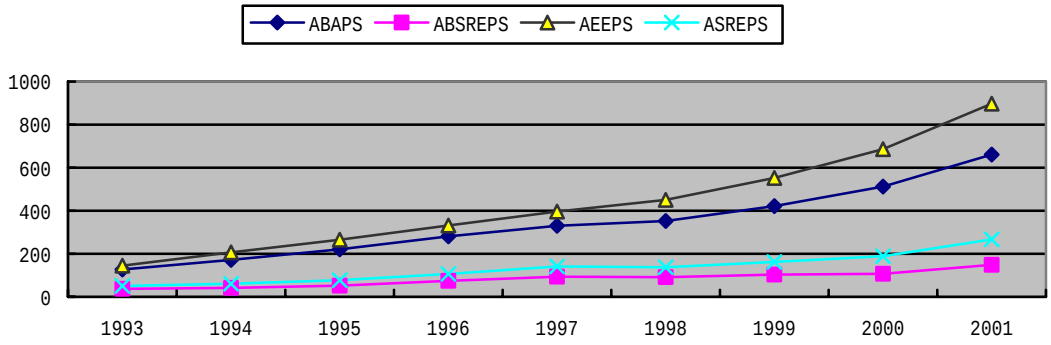
Because the authorities in all levels attached much importance to education, education investments in china have increased dramatically, the AEEPS, the ASREPS, the

[4] In China, from the view of source, educational expenditure includes budgetary allocations, taxes collected by governments of all levels, tuitions and miscellaneous fees collected by schools, donations by social organizations and individuals for education, etc. School-running expenditure excludes personnel expenditure.

ABAPS, and the ABSREPS in primary school increased respectively from ￥278.1, ￥72.8, ￥168.0, ￥17.1 in 1993 to ￥971.7, ￥217.9, ￥658.5, ￥45.2 in 2003, equal to a multiple of 3.5, 3.0, 3.9, 2.6 respectively, and the four indicators in junior high school increased from ￥552.4, ￥170.3, ￥464.9(1994), and ￥49.6 in 1993 to ￥1372.4, ￥403.9, ￥839.4, and ￥83.4 in 2003, equal to a multiple of 2.5, 2.4, 1.8, 1.7 respectively. However, the development was uneven, and the overall education investment increase didn't decrease the gap of education investment between different provinces, but on the contrary broaden the gap.

1) Educational Expenditure in Primary School

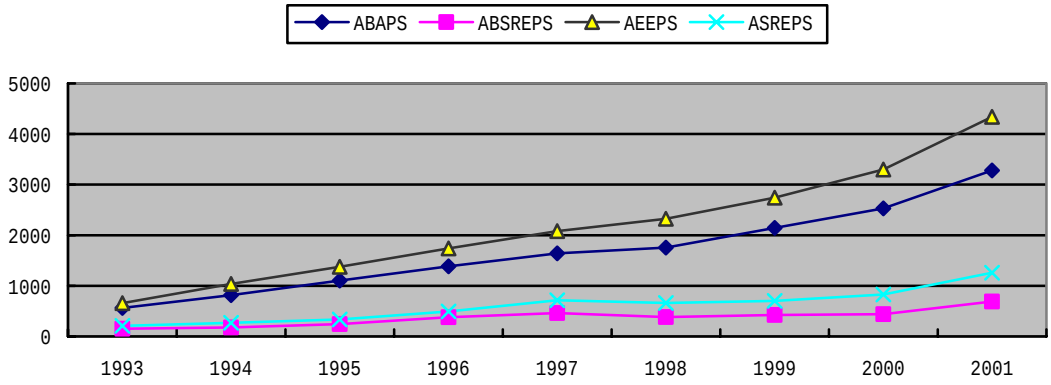
Figure 3: Standard Deviation of Educational Expenditure in Primary School



As shown in Figure 3, all the Standard Deviation of the four indicators share a common character of enlarging trend between 1993 and 2003. The Standard Deviation of the AEEPS and the ABAPS upturn continually, and soared after 1998. On the other hand, the Standard Deviation of the ASREPS and the ABSREPS show a gentle increase before 1997, and with a decline in 1998, the indicator finally rose again; from then on a clear upsurge can be noticed. In fact, the Standard Deviation of the ABAPS,

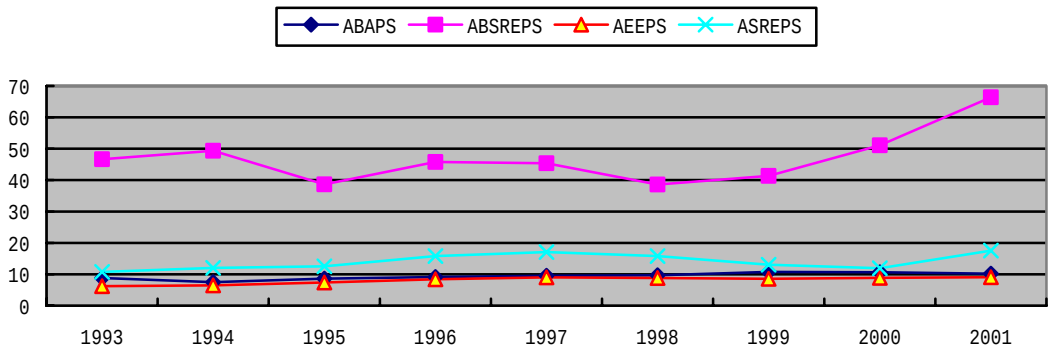
the ABSREPS, the AEEPS, the ASREPS in 2001 have increased a multiple of 4.2, 3.0, 5.2, 4.3 respectively than that in 1993, which indicate that between 1993 and 2001 the absolute difference of education investment in different provinces, no matter whether it concerned with total education investment or the direct investment from the all level local government, is still keeping increasing and show a trend of further increasing.

Figure 4: Range of Educational Expenditure in Primary School



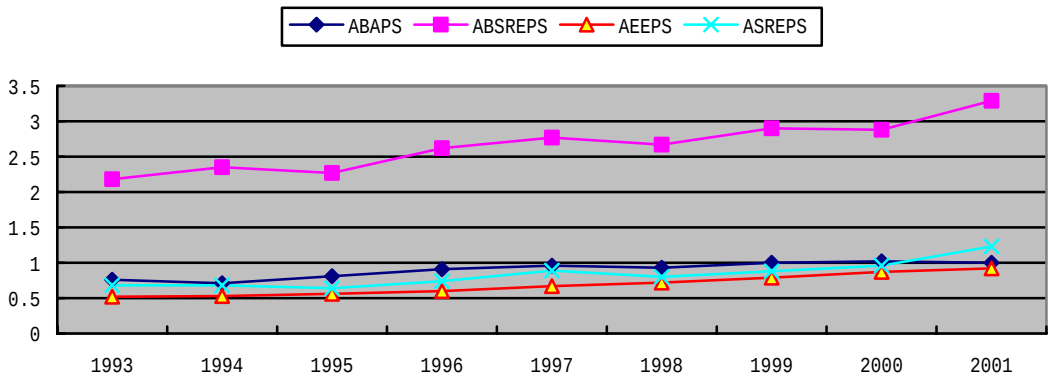
As shown in Figure 4, the change of Range is nearly the same as that of the Standard Deviation: keep increasing from 1993 to 2001 and jump from 2000. In fact, the Range of the ABAPS, the ABSREPS, the AEEPS, the ASREPS in 2001 is 5.8，4.5，6.6，6.1 times as much as that in 1993 respectively. In Figure 5, all the four Range Rate in 1993 are

Figure 5: Range Rate of Educational Expenditure in Primary School



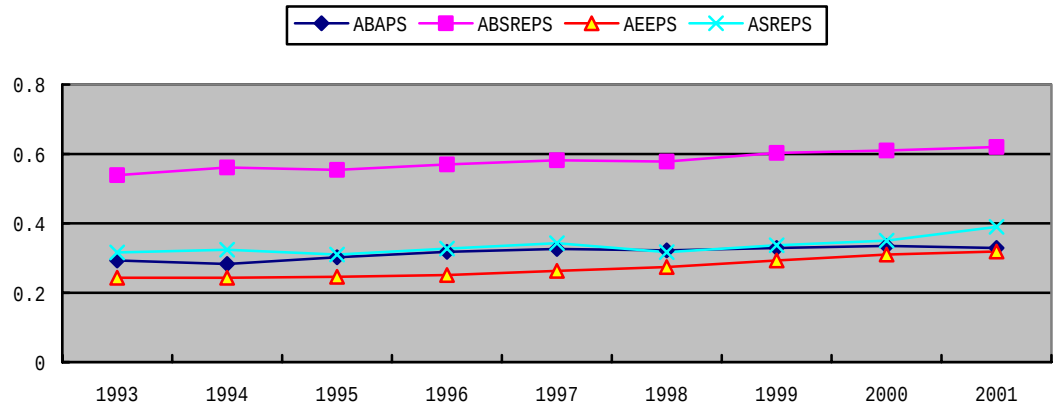
in a relatively high stage, and in the following 8 years keeping going up in fluctuation. The value of Range Rate of the ABAPS, which upsurged markedly from 1999, always kept above 38. Particularly the Range Rate of the ABAPS, ABSREPS, AEEPS, and ASREPS increased from 8.8, 46.7, 6.2 and 10.8 in 1993 to 10.2, 66.3, 9.1, 17.5 in 2001, all of which is pretty high and shows that, together with the expanding of the overall absolute difference, the existing serious polarization in primary education has been widened from 1993 to 2001, especially the ABAPS reaching an starling high value of 66.3 in 2001.

Figure 6: Variation Coefficient of Educational Expenditure in Primary School



As shown in Figure 6, all the Variation Coefficient keeps a slightly going-up, among which that of the AEEPS move upwards slowly and that of the other 3 indicator rise in fluctuation, which indicated that in the last 8 years the relative difference of education investment between different province keep expending from a relatively sharp gap in 1993. Judged from the trend of 2000 and 2001, the gap would be enlarged in near future, especially the ABSREPS and the ASREPS

Figure 7: Gini Index of Educational Expenditure in Primary School

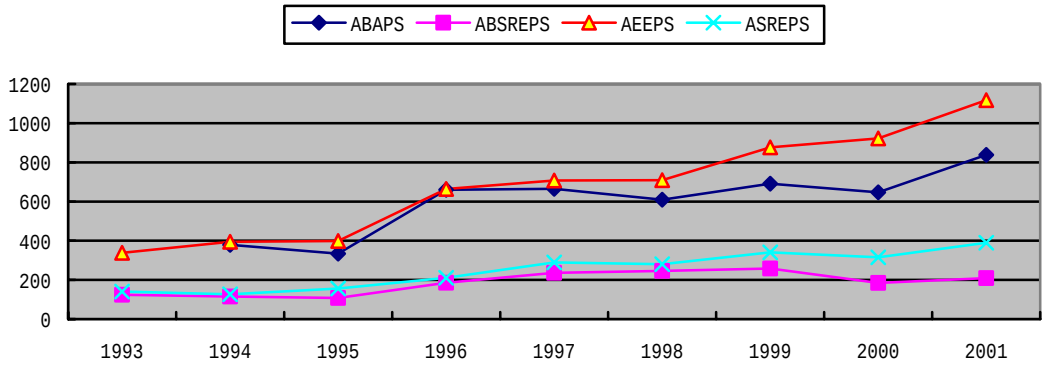


As shown in Figure 7, the Gini Index keeps moving upward with a limited fluctuation. By 2001, the Gini Index of the ABAPS, the ABSREPS, the AEEPS, and the ASREPS has reached up to 0.329, 0.620, 0.319 and 0.390, an increase of that in 1993 by 12%, 15%, 31% and 24%. Among the four indicators, nearly every year the Gini Index of the ABAPS is the biggest, which is followed by ABSREPS, ASREPS, and AEEPS. The fact indicates that the uneven in the primary school education investment between different provinces is gradually becoming more serious, especially the ABSREPS, the Gini Index of which had been 0.54 in 1993 and 0.62 in 2001, a hazard figure.

2) Educational Expenditure in Junior High School[5]

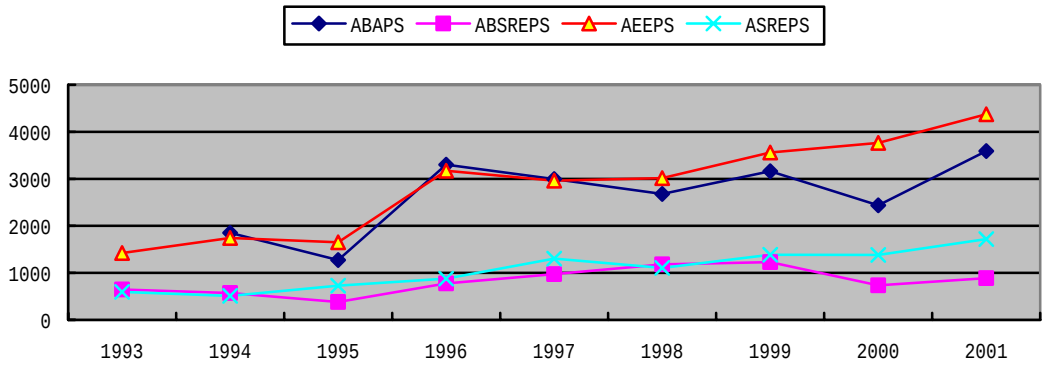
[5] Because the data of educational expenditure in Junior high school in Xizang Municipal Region in 1997 is quite abnormal, they are revised to the mean of the correspondent data in 1996 and in 1998.

Figure 8: Standard Deviation of Educational expenditure in Junior High School



As shown in the Figure 8 and the Figure 9, in the successive 8 years from 1993, the changes of the Standard Deviation of all the four indicators are largely identical but with minor differences: an increasing by different scale in the fluctuation. From 1993 to 2001, the Standard Deviation and the Range Ratio of the ABSREPS increased by 69% and 37% respectively, that of ABAPS increased by 121% and 94%, that of ASREPS increased by 178% and 188%, and that of the AEEPS increased by above 200%. This can be seen as that the absolute discrepancy of the junior high school education investment in different provinces expended continuously, particularly the

Figure 9: Range of Educational Expenditure in Junior High School



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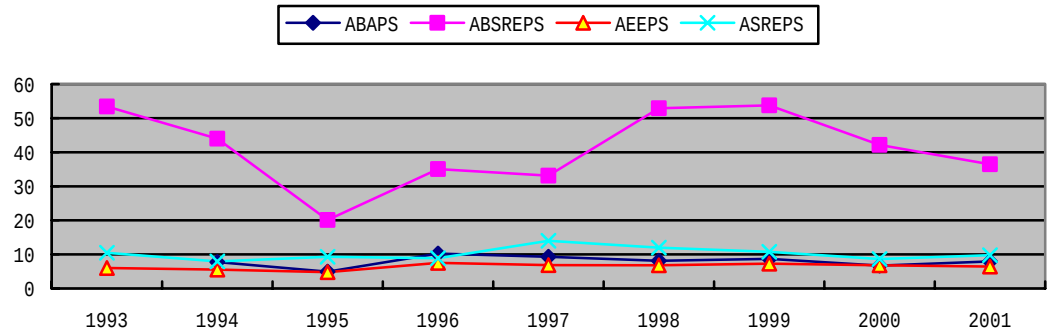
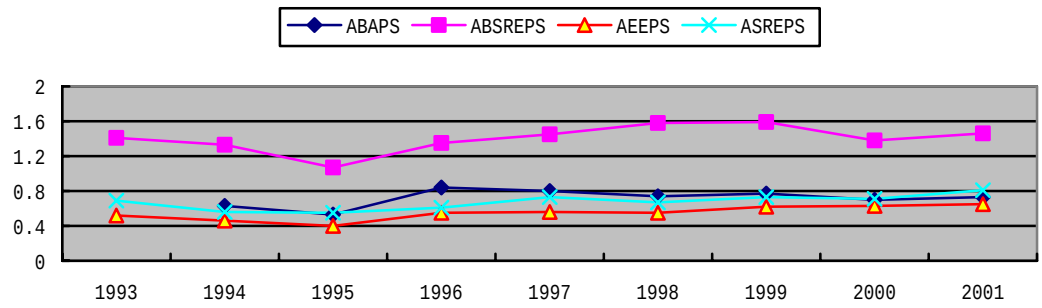
otal education investment, and the polarization is becoming serious from the perspective of the absolute value, the trend of which is deteriorating.

Figure 10: Range Rate of Educational Expenditure in Junior High School



Comparing with that in the primary school, the Range Ratio of the ABAPS in junior high school move downward in fluctuation, but reached up to 36 nevertheless. Besides this, the Range Rate of all the other three indicators, leveling off with small fluctuation, stayed in a high level until 2001. And among the four indicators the Range Rate of the AEEPS is lowest, which is as high as 6.4. This can further indicates the polarization in junior high school education investment is still serious, that is to say, even from the relative prospective, the polarization is not lessened.

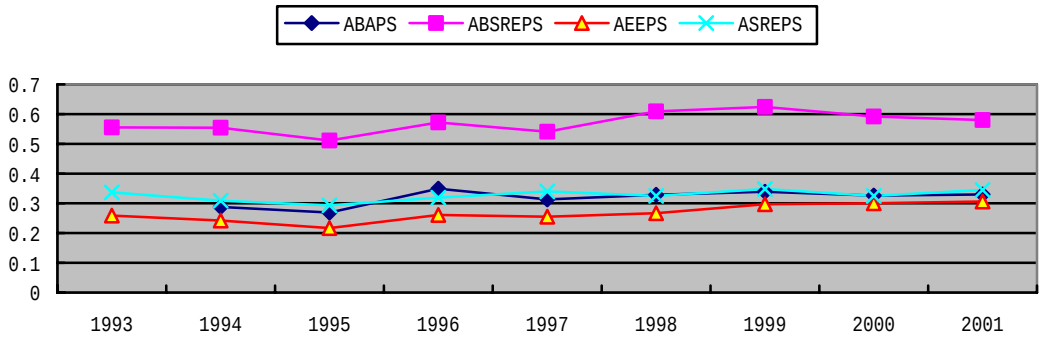
Figure 11: Variation Coefficient of Educational Expenditure in Junior High School



As regards the Variation Coefficient shown in Figure 11, the overall trend of the four indicators is the same: a slight decreasing at the beginning, reaching their lowest point in 1995, then an increasing in the fluctuation, which suggest that the relative discrepancy between different provinces was already in a high level in 1993, with a

little accidental fluctuation, and the value of the relative discrepancy in 2001 is bigger than that in 1993. Judged from the trend of 2000 and 2001, the relative discrepancy might expand further, especially the AEEPS.

Figure 12: Gini Index of Educational Expenditure in Junior High School



As to the Gini Index, which is shown in Figure 12, the overall trend is clear: keeping ascending in slight fluctuation. Further analysis shows that all the four indicators' Gini Index hit their rock bottom in 1995, and three of them, ABAPS, ABSREPS, ASREPS, reach their zenith in 1999, AEEPS in 2001. The Gini Index of the AEEPS keeps going up from 1997 on, which shows obviously the increasing trend. The Gini Index of the AEEPS, ASREPS, and ABSREPS fluctuate in 0.2 to 0.4, which is not in the danger zone but much attention already must be attached to. The Gini index of the ABAPS stays in above 0.5 and fluctuates slightly in about 0.6. All the facts above indicate from some perspective there is much inequity in the government education investment in junior high school.

3. Teacher Quality

"There is a wide consensus among researchers and policy makers that teacher quality is a key component of school quality—perhaps the key component"[6]. And it is also said that it is very hard to overestimate the importance of teachers. We further assume that all the teachers work hard. So the quality of overall teachers in a country determines, at least to great extent, its quality of education. Indeed, great efforts have been devoted in China to attract highly qualified teachers and to improve their quality through all kinds of on-the-job training programs for several years. It is almost impossible to assess exactly the quality of teachers. However, the teachers' education background, or the highest education level that teachers achieved, to great extent, reflects the quality of teachers. In this paper, education level is used as an indicator for teacher quality. The teacher quality in the primary school and the junior high school had improved significantly between 1991 and 2002 in the whole country. The percentage of the primary school teachers who have gotten a senior high school diploma or upwards and those who have gotten a diploma of junior college or upwards increased from 80.7%, 2.7% in 1991 to 97.4% and 33.1% in 2002 respectively. The percentage of the junior high school teachers who have gotten a diploma of junior college or upwards and those who have gotten a college diploma or upwards was 90.4%, 19.7% in 2002, indicating an increase of 38.6 and 12.4 percentage points of that in 1991 respectively. However, there is an unbalanced development in different provinces.

1) Quality of the primary school teachers

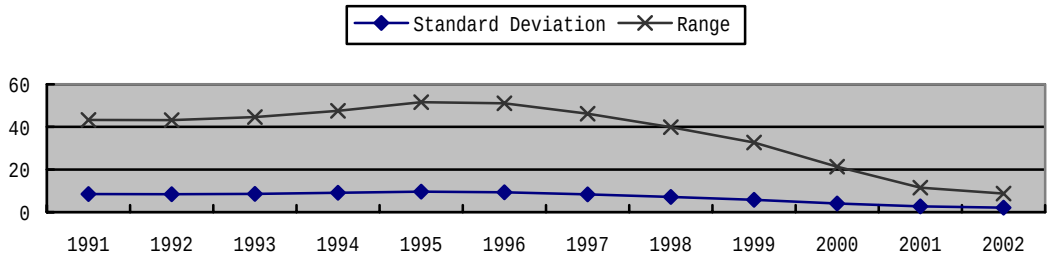
[6] "*Meeting the Highly Qualified Teachers Challenge--The Secretary's Second Annual Report on Teacher Quality*", U.S. Department of Education, Office of Postsecondary Education, 2003

According to the *Teachers Law of the P.R.China*, the primary school teachers should have a certificate of a secondary normal school or upwards. In the reality, those who just have got a senior high school diploma and then have got some training in the courses of education and psychology are taken to be qualified. First, let's have a look at the distribution of the percentage of qualified elementary teachers in different provinces.

The Percentage of the Primary School Teachers Who Have Gotten a Senior High School Diploma or Upwards

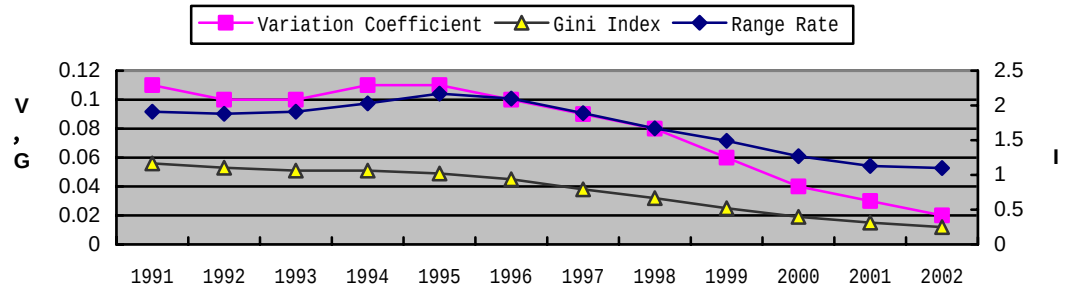
Figure13 shows that the Standard Deviation and the Range climbed yearly from 1991 to their highest in1995 and after that declined successively at a higher rate than their

Figure 13 :Statistical Index I-- Percentage of the Primary School Teachers who Have Gotten a Senior High School Diploma or Upwards



increase. In 2002 the Standard Deviation became 2.1 %, which was lower than that of in 1991, i.e. 8.5%. The Range was also declined to 8.7 %, much lower than that of 1991, i.e. 43.3 %. Figure 14 shows that Variation Coefficient experienced a process of

Figure 14:Statistical Index II--Percentage of the Primary School Teachers who Have Gotten a Senior High School Diploma or Upwards



a decrease and then increase. It was a little bit lower in1992 than it was in 1991, and then went up yearly to its highest in 1995. After that it went down yearly to 1.1 in 2002, which was lower than that of in 1991, i.e. 1.9. The Variation Coefficient was 0.02 in 2002, which was lower than that of 1991, i.e. 0.11. The Gini index was 0.056 in 1991, which was already quite low, but in the 11 years afterwards it decreased yearly to 0.012 in 2002. These data showed that if we took the teachers who had earned a diploma of senior high school, junior college, college or above as a whole, either the absolute difference or the relative difference of the educational background of the primary school teachers in different provinces had been lessened yearly from 1995. To the year 2002, the difference became not much distinct. There was a tendency of further shrinking difference. The quite small Gini index also showed that there was little inequality in different provinces as far as percentage of the primary school teachers who have gotten a senior high school diploma or upwards was concerned.

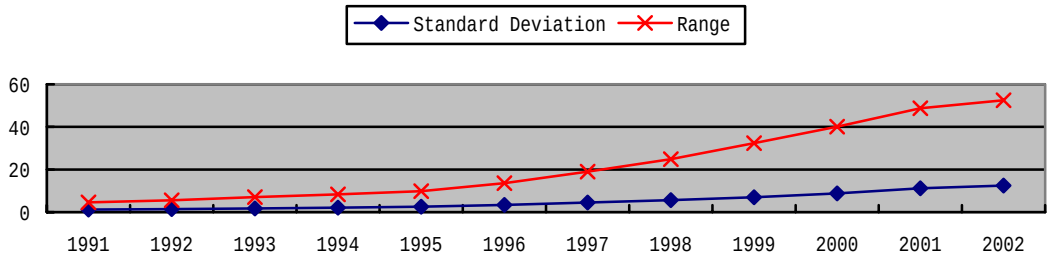
According to requirement of the development of education and the present situation, the analysis of the senior high school diploma as the qualification of the primary

school teacher is not quite productive[7]. Therefore, it is necessary to analyze the distribution of the primary school teachers who have earned a diploma of junior college or above in different provinces.

The percentage of the Primary School Teachers Who Have Earned a Diploma of Junior College or Upwards

Figure 15 shows that from 1991 to 2002 the Standard Deviation and the Range were increasing year by year continuously, finally up to 12.4%, 52.5% respectively, which are 10.4 and 11.5 times of those of 1991. As shown in Figure 16 the Range Rate was 6.1 in 1991, which was quite high. Though there was a slight decrease in 1992 to 5.9, there was a clear increase afterwards and after 1995 the increase accelerated to its

Figure 15 :Statistical Index I-- Percentage of the Primary School Teachers who Have Gotten a Junior College Diploma or Upwards



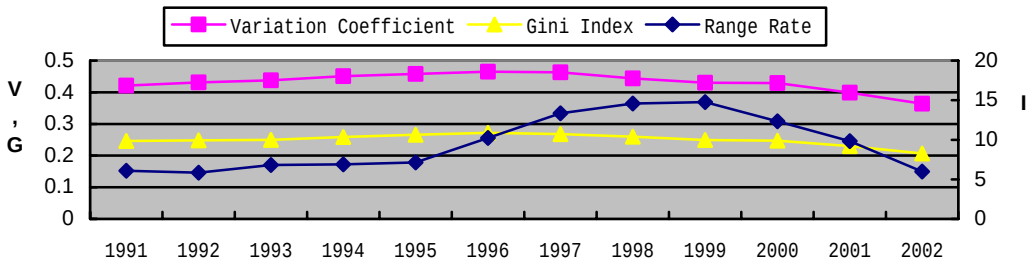
highest, 14.8, in 1999. From 2000 on, there was a sharp decline to 6.0 in 2002, which was still quite high. The cause that the Range was continuously becoming larger while the Range Rate becoming smaller from 2000 is that from 1995 to 2002, the percentage of the primary school teachers who have earned a diploma of junior college or above in Tibet, where the percentage was the lowest in the whole country,

[7] In fact, it was announced several years ago in developed east areas, such as Beijing, Shanghai, etc. that newly recruited teachers in the primary school and in the high school should have gotten a junior college diploma or upwards, a college diploma or above respectively.

increased sharply, i.e. 2.35 % in 1999, 3.54 % in 2000, 5.52 % in 2001, 10.53 % in 2002. Though the increase was smaller compared with the increase in the country as a whole at the same time, its acceleration was quite distinct owing to the lower base. The data above shows that the absolute difference of the percentage of the primary school teachers who had earned a diploma of junior college or above in different provinces had been enlarged in the past 11 years, and there was a tendency of further enlargement in the difference. The range was also enlarged, which means that there exists polarization in different provinces and the polarization will become much more evident.

Figure 16 shows that Variation Coefficient had a slow rise up to its highest 0.465 in 1996, and from 1997 on there appeared a slow decrease and after 2000, the decrease became sharply. In 2001 it was 0.4, which was first time lower than 0.42 of 1991. In

Figure 16 : Statistical Index II--Percentage of the Primary School Teachers who Have Gotten a Junior College Diploma or Upwards



2002, it decreased further to 0.36. Variation Coefficient shows that in the first 5 years from 1991, the relative difference among different provinces became larger yearly and to the greatest in 1996, after that it became smaller. In 2002 it was even smaller than that of 1991. However, there is nothing for us to be optimistic. The change of Gini Index was similar to that of variation coefficient. It also increased yearly from 1991

and to its highest 0.272 in 1996, and after that year it decreased yearly, and to its lowest 0.207 in 2002, which was lower than that of 1991, i.e. 0.246. From Gini Index we know that inequality has not become a serious problem, but one thing we should pay attention to was that the Gini index of the percentage of the primary school teachers who had earned a diploma of junior college or above was more than three times that of the percentage of those who had gotten a senior high school diploma or above, it was above ten times in 2002.

2) Quality of the Junior High School Teachers

According to the law of China, One will be a qualified junior high school teacher so long as he has a diploma of junior college or above. First, let's have a look at the distribution of the percentage of qualified junior high school teachers in different provinces

The Percentage of the Junior High School Teachers Who Have Gotten a Junior College Diploma or Upwards

Figure 17 :Statistical Index I-- Percentage of the Junior High School Teachers Who Have Gotten a Junior College Diploma or Upwards

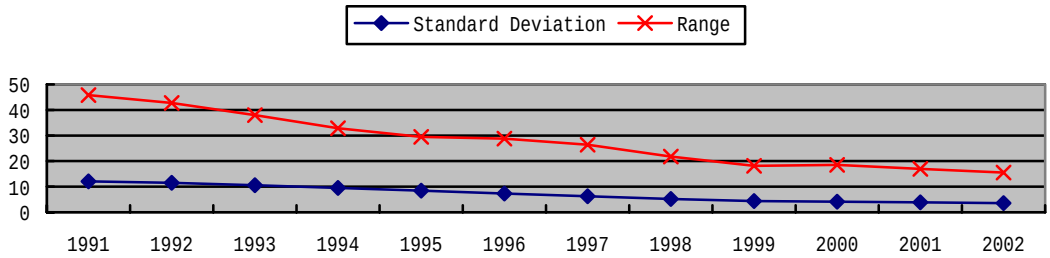
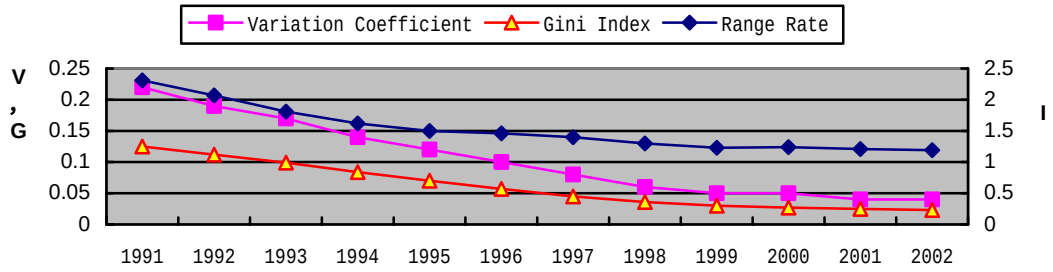


Figure 17 shows that from 1991 to 2002 the Standard Deviation and the Range went

down yearly from 12.1% and 45.8 % to 3.6 % and 15.5% respectively, and the net decreases were 70% and 66%. From Figure 18 we know that the Range Rate declined

Figure 18 : Statistical Index II--Percentage of the Junior High School Teachers Who Have Gotten a Junior College Diploma or Upwards



sharply year by year before 1995, and then the tendency became slow down. It was 2.3 in 1995 and 1.2 in 2002 with a decrease of 48%. The Variation Coefficient was 0.22 in 1991. Even though it was small, as figure 18 shows, it kept falling year by year, finally to 0.04 in 2002. Like other statistical index during the period, Gini Index dropped gradually from 0.22 in 1991 to 0.023 in 2002. All of these indicated that even though the difference between provinces was not so big in 1991; the difference both in absolute term and in relative term had been further declined since the year 1991. Meanwhile, polarization became less distinct yearly. To the year 2002, the difference in absolute term was already quite small and the difference in relative term was so small that it could be neglected. In other words, if we took the teachers who had a diploma of junior college or above as a whole, the difference of the quality of junior high school teachers had been shortened in the past 11 years and to 2002 it had become unclear.

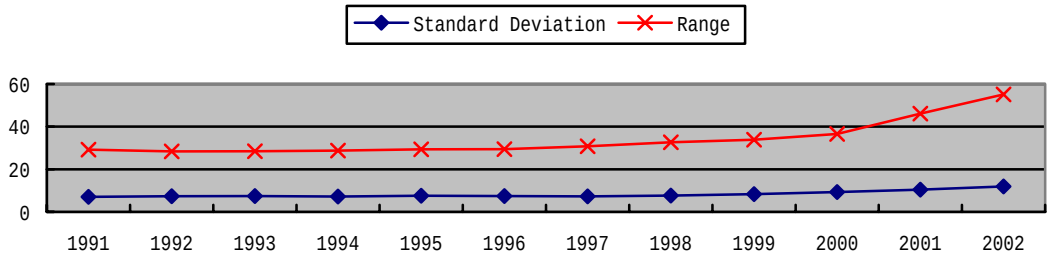
However, the requirement to a junior high school teacher was a diploma of junior college or above, which, as the qualification of a junior high school teacher, was a low

standard and could not meet the need of the development of education and the need of cultivating talents of the times. A college diploma should and will be the lowest requirement of a junior high school teacher. Therefore, it is necessary to make an analysis of the percentage of junior high school teachers who have gotten a college diploma or above.

The Percentage of the Junior High School Teachers Who Have Gotten a College Diploma or Upwards

Figure 19 indicates that from 1991 to 1997 the Standard Deviation experienced a fluctuation and had a slight increase. After that it kept on rising steadily to 11.9%, and that was an increase of 68%. The change of the Range was a little different from that of the Standard Deviation. There was a drop in 1992 and from then on it got a steady rise. After 2000 there was a clear acceleration in the rise. To 2002 it went up to 55.1%

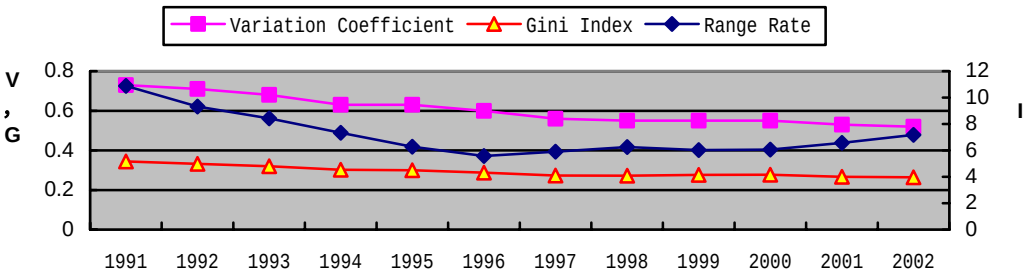
Figure 19 :Statistical Index I-- Percentage of the Junior High School Teachers Who Have Gotten a College Diploma or Upwards



from 29.2 % in 1991, an 89 % increase.

Figure 20 shows that the Range Rate dropped steeply from 10.9 in 1991down to 5.6 in 1996, and then went up steadily to 7.2 in 2002. Variation Coefficient and Gini Index

Figure 20 : Statistical Index II--Percentage of the Junior High School Teachers Who Have Gotten a College Diploma or Upwards



shrank very slowly from 0.73, 0.34 in 1991 to 0.52 and 0.26 in 2002 respectively. All of these indicate that the difference of the percentage of junior high school teachers who have gotten a college diploma or upwards between different provinces was already great in the year of 1991, but the difference in the absolute term had become still greater in the 11 years though the change was not drastic. During the same period polarization became a serious problem. With the increase of the number of the junior high school teachers who had a college diploma or upwards, the relative difference shrank a little.

4. Conclusion

From the above analysis, the following conclusions can be drawn.

1) The difference in the net enrolment ratio of primary school students of different provinces either in the absolute term or in the relative term had been shrinking since the implementing Compulsory Education Law of the P.R.China in 1986, which means that with the carrying out of the nine years' compulsory education in the whole country since 1986, the general difference of the primary education in different

provinces has shown a tendency to shrink. As the nine years compulsory education was getting universal, to the year 2002, there became almost no difference in the opportunity for the access to the primary school in different provinces, that is, school age children have gotten equal opportunity to go to primary school.

2）From the aspect of financial input to education, the total investment in education in the country as a whole was increasing continuously in the years of 1991 to 2001, but during the same period the difference was further enlarging either in the absolute term or in the relative term in different provinces and polarization became more serious. The difference in the budgetary allocation on education was the most distinct. There is a tendency that the difference will grow even larger, especially in the level of the primary education.

3) From the aspect of the teacher quality, the educational background of the teachers in the primary school and junior high school becomes better. The difference of the percentage of the primary school teachers with a senior high school certificate or upwards and the junior high school teachers with a junior college diploma or above in different provinces are shrinking either in the absolute term or in the relative term. It became very small in 2002. The absolute difference of the percentage of the primary school teachers with a junior college diploma or above and the junior high school teachers with a college diploma or above in different provinces is growing steadily and polarization exists, but the change of their relative difference is different. The former took the year 1996 as the dividing line. Before 1996 the relative difference

was increasing and after that it was lessened. After 2001 it became smaller than that of 1991. However the relative difference of the latter was continuously shrinking. Therefore, as far as the educational background of the teachers of the primary school and the junior high school in different provinces is concerned, there exists a clear distinction and the absolute difference between different provinces is still growing.

In general, the unbalanced development of education in different areas manifests itself not in the quantity, but in the quality. If we take the financial input to education and the quality of the teachers as the standard, the quality of education is different in different areas and the difference is growing in the recent years. This implies that even though the children in different provinces have the equal opportunity to go to school, the quality of education they get is greatly different.

IV Causes Analysis

It can be said that the imbalanced development of compulsory education in China resulted from the effects of many factors including both the objective factors and subjective factors, in the writer’s opinion, among which the followings are the main reasons.

1. The Gap of Economic Development among Different Regions

As we all know, the gap of economic development of different regions in China is gradually enlarging during the period of more than twenty years' reform and opening up, which is the immediate reason for the imbalanced development of regional compulsory education. With the imbalanced development of regional economy, the gap of income of residents among different regions is widening step by step and the industrial structure and financial revenue among different regions are varying.

For the first thing, the widening of regional income directly results in the relatively big difference of educational demand among regions. The comparatively typical example is that many parents in the east rich areas rack their brains and pay much money in order to send their children to better schools, but some of the parents in the poor areas are reluctant to send their children to schools, though they are exempted from the tuitions and fees.

For the second thing, according to the economics theory, the individual's aim for investing in education is to obtain much more economic benefit; therefore, the difference of demand of labor employment market in various regions must be bringing direct influence to the difference of educational demand. It is shown by the document that the differences of the proportion of the employment in the primary, secondary and tertiary industries to the total employment in different regions are quite big. In 2001, in Beijing, Shanghai and Tianjin, the three developed municipal cities, 80% of the total employment are engaged in the secondary and tertiary industries; in

the relatively prosperous areas, such as Zhejiang, Jiangsu and Guangdong, the proportions of the employment engaged in the primary industry to the total employment are respectively 35.7%, 41.4%, and 40.0%, however, in the relatively backward areas, such as Guizhou and Yunnan, the employment engaged in the primary industry is more than 70% of the provincial total employment.

For the third thing, the financial revenue determines the financial ability and education in China is decided by the financial support to a considerable degree. On one hand, the differences of regional financial revenue greatly attribute to the differences of educational investment. On the other hand, since 1985, with a view to fully mobilizing the initiative of local areas, the system of school establishment and management separately compulsory education management was implemented, which at the same time, indicated that local areas are mainly responsible for their compulsory education.

To summarize, the widening gap of regional economic development in China, directly influences the educational demand and investment and results in the imbalanced development of compulsory education in regions.

Table 3： Expenditure of Education from 1978 to 2001

year	Educational Expenditure	Educational Expenditure as a Percentage of GDP	Public Expenditure on Education	Public Expenditure on Education as a Percentage of GDP	Public Expenditure on Education as a Percentage of Educational Expenditure
1978	94.23	2.60	94.23	2.60	100.00

1979	113.03	2.80	113.03	2.80	100.00
1980	145.50	3.22	134.89	2.99	92.71
1981	157.65	3.24	132.84	2.73	84.26
1982	175.85	3.32	162.32	3.07	92.31
1983	198.36	3.34	181.67	3.06	91.59
1984	242.72	3.38	215.46	3.00	88.77
1985	306.68	3.42	262.90	2.93	85.72
1986	363.43	3.56	324.45	3.18	89.27
1987	385.11	3.22	346.70	2.90	90.03
1988	443.53	2.97	414.49	2.78	93.45
1989	594.67	3.52	518.14	3.06	87.13
1990	659.38	3.56	563.98	3.04	85.53
1991	731.51	3.38	617.83	2.86	84.46
1992	867.06	3.25	728.75	2.74	84.05
1993	1059.94	3.06	867.76	2.51	81.87
1994	1488.78	3.18	1174.74	2.51	78.91
1995	1877.95	3.21	1411.52	2.41	75.16
1996	2262.34	3.33	1671.70	2.44	73.89
1997	2531.73	3.40	1862.54	2.49	73.57
1998	2949.06	3.76	2032.45	2.55	68.92
1999	3349.04	4.08	2287.18	2.79	68.29
2000	3849.08	4.30	2562.61	2.87	66.58
2001	4637.66	4.83	3057.01	3.19	65.92

Source: *Stride from a Country of Tremendous Population to a Country of Profound Human Resources*, the Project Team of China's education and Human Resource Development, Beijing: Higher Education Press, 2003

2. The Lack of Investment in Compulsory Education

Since the establishment of the P.R.C, the Chinese government has attached great importance to education. As we can see from Table 3, the total amount of educational expenditure has increased continuously during the past twenty years: it reached 463.766 billion Yuan in 2001 from 9.423 billion Yuan in 1978; the public expenditure reached 305.701 billion Yuan from 9.423 billion Yuan; the percentage of the national educational expenditure to GDP and the percentage of public expenditure to GDP

went on growing up. However, compared with other countries, China, as a developing country, with a population of more than 1 billion, is confronted with a serious shortage of educational investment and government educational investment. The percentage of total educational expenditure to GDP in 2001 was 4.83%, which was less than the level of OECD countries in 1998, i.e. 5.75%. The percentage of public expenditure to GDP was 3.19% in 2001, which was dramatically smaller than that of 5% of Brazil, that of 5.7% of Malaysia and that of 5% of Thailand. If per capita educational expenditure was accounted, the gap was much wider and the government investment in compulsory education was apparently weak. In 2001, the public expenditure in total educational expenditure in the compulsory education was only 63.2%; the government budgetary allocation in total educational expenditure in the junior secondary education and primary education was respectively less than 60% and 70%. The lack of investment in compulsory education, especially in public expenditure on education, renders the government unable to fully fulfill its performance of improving the equity of education.

3. The Wrong Policy Orientation

Since 1980s, during the process of gradually popularizing 9-year compulsory education, basic education has been always restricted by the contradiction of equality and efficiency and faces the dilemma in which one choice is to meet the majority of children’s education demand and let all of the children get necessary education and the other choice is to give better education to the minority of children who are left

after fierce competition and careful sifting. Looking backward, as a matter of fact, China has taken the road of educating the outstanding and carried out the policy of excellence orientation or imbalanced development, that is, the schools in the areas of economic prosperity or with better quality and higher level usually enjoying more resources, in contrary, the schools in the areas of relatively backward economy or with poor quality and low level having less resources. The wrong policy orientation has further worsened imbalanced development of compulsory education and has damaged the equity of education.

1) The Wrong Policy of Educational Resource Configuration

To see from the macro level, the government policy of developing the coastal areas has brought more and better educational resources here than those to the West and the rural areas. The education in these areas also benefits a lot, especially the circulating capital and the teacher resources which provide the most important educational resources in the coastal areas. For example, there exists a trend toward the developed areas in the system of government current financial transfer. "*It is estimated that the local per capita financial subsidies from the central government in 1999 was respectively 711 Yuan, 587 Yuan and 465 Yuan in Shanghai, Beijing and Tianjin; but, it was only respectively 171 Yuan, 178 Yuan and 183 Yuan in Henan, Sichuan and Anhui. The local government finance of developed areas is primarily greatly stronger than that of the backward areas, together with the more financial subsidies from the central government, which makes the gap of finance among areas broader and*

broader. ”[8]To see from the moderate level, the cities gain much more and better educational resources from the character of city orientation in the education policies than the rural areas. In the long run, under the planned system of city-country dualistic structure and high intensity, the government public policies attach priority to or even reflect and embody the interest of urban residents, including employment, medical treatment, housing, labor insurance and other social welfare. In general the same can be said to the educational resources in the cities such as schoolhouses, equipment and teachers. The phenomenon has been changed a little with the progress of urbanization and the gradual establishment of market economy system, but it is far from enough. Moreover, in 1985, the Central Committee of the Chinese Communist Party issued the "*Decision on the Reform of the Educational Structure*", laying down the principle that the local governments should be responsible for and manage separately their own basic education and under the influence of economic factors, many local governments in the rural areas transferred the right of basic education management to a lower level, which further widened the gap of educational resource configuration between cities and the rural areas. To see from the micro level, the policies of "key schools" and "example schools" generated the gap of educational resource configuration between the high schools and the primary schools in cities. All in all, the wrong policy of educational resource configuration, such as teachers, money and equipment, has further unequalized compulsory education. Recent years, the central government has come to realize the severity of the problem and has taken some effective measures,

[8] Source: *Stride from a Country of Tremendous Population to a Country of Profound Human Resources*, the Project Team of China's education and Human Resource Development, Beijing: Higher Education Press, 2003

such as "*National Compulsory Education Project in the Poor Areas*"[9] and "*Two Exemption One Subside*"[10]and so on which have not got obvious effects due to various reasons.

2) The Misplacing of the Policy of Educational Evaluation and Orientation

In the long run, although there exists the national standard that the condition of school running is measured off according to cities and rural areas at the moment of compulsory education, the standard of the condition of school running of compulsory education in the backward areas is rather lower than that in the economic prosperous areas during the enforcement of the national standard; rural areas are lower than cities because one thing is that the national standard is of principle and the other thing is that the local governments are entitled the right to set up some standards. Similarly runs the evaluation of compulsory education. The grade standard of schools at the moment of compulsory education has actually come into being through the establishment of key schools and example schools.

In an active sense, as for this conduct, it fully considers the actual situation of different regions and it is an attitude of seeking truth from facts; in a pessimistic sense, lowering the standard of compulsory education in the backward areas, especially in the rural areas, means to encourage to broaden the gap of compulsory education

[9] In order to strengthen the compulsory education in poor areas, China carried out "*National Compulsory Education Project in the Poor Areas*" in 1995. Central government set up special funds, mixing the funds of local government, to help and support the poor areas to popularize nine years compulsory education by various form, such as schoolhouse construction, teacher training, etc.

[10] "*Two Exemption*" means exemption of incidental expense and book fees. "*One Subside*" means to subsidize the poverty-stricken boarders. The objects are the poverty-stricken students in compulsory education in rural areas.

between the developed areas and the backward areas. The misplacing of evaluation policy has intensified the imbalanced development of compulsory education.

V Recommendation

Chinese education has moved into a new developing stage since China's GDP has improved greatly which was credited to over 20 years' economical development at a high speed. Nine-year compulsory education has almost been universal nationwide. The senior secondary education is going to be popularized. And the educational administrative system focusing on "county" has been run, and teachers are paid by the county government. Therefore, we should and could pay much more attention to better solving the problem of education equity, offering more children the opportunity of the high quality education.

1. The idea of "education equity and the balanced development of compulsory education" should be grounded society wide.

Though it is hard to stipulate the suitable policy, carrying it out is much harder. Enforcing the policy not only depends on the administrator, but also on the support of people. A good social environment is not only the necessity of stipulating the policy but the necessity of enforcing it. The idea of "education equity and the balanced development of compulsory education" has not been widely acclaimed by the society. Not only the local government but also the common people has not reached an

agreement, the idea “efficiency enjoying the priority, taking equity into consideration” still affects policy stipulating. The typical example is “good student studying in good school” and “good school having the priority of enrolling good student”; it seems this is just the rule. Then Chinese central government had better point out the importance of balanced development directly, strengthen the propaganda of it, make majority of people understand and agree with the principle of balanced development of compulsory education. Government official decision-makers especially those senior ones should deeply understand the necessity and importance of balanced development of compulsory education, and integrate their understanding with policy stipulation, decision making and practicing. They should make sure the new concept of resource allocation must be utilized: shortening the difference during development, strengthening equity. They should strengthen the research on the policy of balanced development of basic education, and then it can better guide the practice.

2. Government at all levels shoulder responsibility conscientiously, strengthen the input of education further, especially the input of compulsory education.

Though whether or not compulsory education is a public product is still under dispute in the academia, but most of the experts think that compulsory education is public goods. Then the government should shoulder the responsibility of compulsory education according to the economic theory that public goods should be provided by government. Government at all levels should go on strengthening the public

expenditure on education at the time that we are increasing the total input in education. The government should pay much more attention to the structure of public expenditure, focusing on the public expenditure in compulsory education, investing more revenue in compulsory education. If it is possible, the educational expenditure on compulsory education should be provided by the public revenue gradually in order to guarantee that all the society members can get the same kind of standard education. On the other hand, we should clarify what responsibility government at all levels should shoulder so that we can guarantee the sufficient funds and the equity of the compulsory education. Under the current difficult financial situation in most counties, in order to strengthen the ability for macroscopically regulation and control, promote the regional balanced development of compulsory education effectively, we can take it into consideration that we can stipulate such kind of compulsory educational system: promoting the educational justice, improving the quality of education as the goal in an all-round way, central government and provincial government regard ensuring the funds to be put its main duty into as, at county level to rely mainly on fulfilling concrete government responsibilities.

3. Adjust the policy focus, strengthen the ability of macro-manipulation by the government and promote the balanced development and fairness of compulsory education.

Under the sound market mechanism, efficiency can be achieved by the market while the government should maintain fair competition; therefore, the government bears the

main responsibility for narrowing the gap and promoting equity within compulsory education. The government should immediately adjust the slip policy emphasis which focused on the developed areas to the backward areas, and at the same time enhance the intensity of support.

1) Adjust the policy of educational resource configuration, support and help to develop the compulsory education in backward and rural areas. It is known from above mentioned analysis that one of the key factors for uneven educational development is the uneven educational resource configuration, especially the significant imbalance of collocation of educational expenditures and teacher resource, that is, the educational resources (such as teachers, educational equipment and expenditures) in backward and rural areas are less than those in the developed areas and cities (or the quality of educational resources is worse), among which the distribution of educational expenditures is far from balanced to the degree that it can not bear any negligence. Hereby with a view to promoting educational fairness, provide same education opportunity, the government must adjust its policy of educational distribution and the proportion of educational subsidies to the developed areas and the backward areas. The emphasis should be fixed on the backward areas, instead of leaning to the developed areas or being located at the same level. Currently the followings should be emphasized on.

A. The central government and provincial governments should perfect the system of financial transfer-payment and increase the transfer-payment of compulsory education,

especially in the backward and rural areas. Under the current situation that the central government has already decided to appropriately increase the financial transfer-payment, the proportion of educational expenditures in the financial transfer-payment should be cleared defined. As the situation matures, the standard system of financial transfer-payment in which different areas have different standards for compulsory education expenditures and the governments at different levels share their respective compulsory education expenditures should come into being and be made legal.

B. Governments at different levels, especially the central government, should offer special help to the backward areas. The actual effect of the implemented "*National Compulsory Education Project in the Poor Areas*" and "*the Subsidies for the Students of Poverty-stricken*" should be evaluated and analyzed and the lessons and experience should be summarized, upon which the existing special policies should be gradually improved and at the same time more and more effective policies and projects should be made to provide more education opportunities for people in the poverty-stricken areas.

C. The focus of policies should be strengthened and the teacher resource should be distributed in the balanced manner, including establishing some preferential policies, encouraging and attracting outstanding teachers to teach in the poor areas and the rural areas and setting down the regular rotating system for the primary and high school teachers within certain regions.

2) Stipulating definite highly qualified compulsory education standard, promoting the construction of standard school at the stage of compulsory education. As it stated before, for some kinds of reasons, the actual criteria for founding school and school running in compulsory education in some backward areas and county have a deep gap compared with the developed areas and cities, including the educational funds, the requirement of the teachers quality, the construction of the schoolhouse, the equipments of the library and so on. The standard for founding school and school running in the impoverished areas and country must be improved for the goal of promoting and assuring of the quality of compulsory education, stimulating the balancing developing of compulsory education. Besides that, lightening and annulling the grading standard of school in compulsory education, setting the same national qualified standard in the form of legal, accelerating the construction of school at the standard stage of compulsory education should be done. The concretion of education responsibility endowed by the government is helpful to the evaluation .It will promote the government to solve the fair problems of compulsory education

3) Adjust the policy of educational evaluation and encourage the compulsory education to develop in balance. Although the central government has proposed that it was no good setting key schools in the level of compulsory education, short of enough good educational resource and other reasons made this proposal in vain, the system of key school was not touched. So the government should take more serious measures, such as evaluation, supervision and guidance to entirely delete the hierarchy in the compulsory education, erasing those window-schools. After setting the higher

standard towards the qualification of school-founding and school-running, which should be suitable for China's national condition and the requirement of educational development, the evaluation organized by the government should put their emphasis on the qualification standard. No higher demand should be mentioned if the qualification standard is met. In some cases, this standard can be improved according to the better condition of the schools, but this improvement can not be looked as the rule of evaluation. In the process of compulsory educational evaluation or supervision, the undeveloped areas especially the rural areas should be attached more attention. At the same time, this evaluation or supervision should put more emphasis on supervising the local government to provide enough conditions to support the rapid development of compulsory education in rural areas. These conditions includes several aspects such as funds, schoolhouse, the quality and quantity of teachers, educational equipments, books and materials needed for teaching and so on. Through these measures, the reaping development in undeveloped areas can be expected and thus further raise Chinese compulsory education level and encourage Chinese education to develop fairly and in balance.

Solving the problem of educational equity and balanced development of compulsory education is a really complicated systematic project. It could be much harder in China, a developing country with a population of over 1 billion, it needs to be dedicatedly designed and well systematically oriented, and it needs the joint effort of each sides:

such as academia, government and society and so on.

APPENDICES

APPENDIX 1

Statistical Indices of Net Enrolment Ratio of Primary School 1984~2002

Indices / Year	Standard Deviation (%)	Range (%)	Range Rate	Variation Coefficient	Gini Index
1984	10.75	57.72	2.37	0.12	0.044
1985	10.03	53.51	2.15	0.11	0.039
1986	11.00	60.00	2.50	0.12	0.040
1987	9.54	51.38	2.06	0.10	0.034
1988	8.23	43.88	1.79	0.09	0.030
1989	8.63	46.59	1.88	0.09	0.031
1990	8.46	45.38	1.83	0.09	0.029
1991	8.45	45.74	1.84	0.09	0.029
1992	7.97	44.22	1.80	0.08	0.026
1993	8.63	47.53	1.91	0.09	0.029
1994	6.88	37.47	1.60	0.07	0.023
1995	6.51	35.38	1.55	0.07	0.021
1996	4.92	26.39	1.36	0.05	0.017
1997	4.08	21.79	1.28	0.04	0.015
1998	3.56	18.75	1.23	0.04	0.014
1999	3.08	16.51	1.20	0.03	0.011
2000	2.69	14.19	1.17	0.03	0.010
2001	2.04	11.40	1.13	0.02	0.008
2002	2.26	11.71	1.13	0.02	0.011

Source: Original data is from *Essential Statistics of Education in China, 1984~2002*, Department of Development & Planning, Ministry of Education, P.R.C., Beijing:

People's Education Press. Data in the form is calculated by author based on the forum given in this paper.

APPENDIX 2

Statistical Indices of Educational Expenditure per Student in Primary School

year / Indices	1993	1994	1995	1996	1997	1998	1999	2000	2001
Standard Deviation									
ABAPS	127.1	171.5	221.1	281.3	330.3	352.0	421.4	512.3	661.1
ABSREPS	37.3	41.6	51.8	74.6	94.0	91.7	103.6	107.1	148.6
AEEPS	144.7	206.3	265.6	331.7	396.5	450.6	552.6	686.5	897.7
ASREPS	50.5	61.1	77.4	106.4	141.3	137.6	161.9	189.0	267.1
Range									
ABAPS	563.8	817.0	1103.4	1384.0	1641.6	1755.1	2145.4	2530.2	3278.5
ABSREPS	152.0	176.6	244.8	378.3	460.8	383.5	423.3	439.4	689.0
AEEPS	657.6	1036.2	1375.5	1739.9	2081.1	2324.7	2743.4	3297.0	4339.3
ASREPS	208.0	268.7	335.5	492.8	716.0	660.2	701.9	829.7	1258.7
Range Rate									
ABAPS	8.8	7.5	8.6	9.1	9.5	9.7	10.8	10.7	10.2
ABSREPS	46.6	49.4	38.7	45.8	45.4	38.6	41.3	51.1	66.4
AEEPS	6.2	6.5	7.4	8.4	9.0	8.8	8.5	8.9	9.1
ASREPS	10.8	12.1	12.6	15.8	17.1	15.8	13.0	11.9	17.5
Variation Coefficient									
ABAPS	0.76	0.71	0.81	0.91	0.96	0.93	1.00	1.02	1.00
ABSREPS	2.18	2.35	2.27	2.62	2.77	2.67	2.90	2.88	3.29
AEEPS	0.52	0.53	0.56	0.60	0.67	0.72	0.79	0.87	0.92
ASREPS	0.68	0.68	0.64	0.74	0.89	0.80	0.88	0.96	1.23
Gini Index									
ABAPS	0.29	0.28	0.30	0.32	0.33	0.32	0.33	0.33	0.33
ABSREPS	0.54	0.56	0.55	0.57	0.58	0.58	0.60	0.61	0.62
AEEPS	0.24	0.24	0.25	0.25	0.26	0.27	0.29	0.31	0.32
ASREPS	0.32	0.32	0.31	0.33	0.34	0.32	0.34	0.35	0.39

Source: Origial data is from department of finance of ministry of education of the P.R.C. Data in the form is calculated by author based on the forum given in this paper.

APPENDIX 3

Statistical Indices of Educational Expenditure per Student in Junior High School

year / Indices	1993	1994	1995	1996	1997	1998	1999	2000	2001
Standard Deviation									
ABAPS		378.7	334.4	659.7	665.3	609.6	691.1	646.8	838.5
ABSREPS	124.1	114.9	107.9	185.2	236.2	245.8	257.9	184.7	209.2
AEEPS	338.0	394.9	398.5	664.3	707.3	709.0	876.4	922.5	1117.9
ASREPS	140.2	126.7	156.4	211.0	289.2	280.2	340.4	315.5	389.3
Range									
ABAPS		1852.9	1272.9	3303.2	2995.6	2678.2	3160.9	2436.0	3592.2
ABSREPS	646.6	572.3	382.7	777.5	972.5	1182.5	1230.2	736.2	888.7
AEEPS	1422.9	1744.2	1652.1	3171.6	2959.9	3014.1	3561.2	3765.2	4375.4
ASREPS	596.2	511.8	728.8	878.5	1304.9	1105.6	1385.1	1381.5	1719.5
Range Rate									
ABAPS		7.8	4.9	10.3	9.3	8.2	8.7	6.7	7.9
ABSREPS	53.4	44.0	20.1	35.1	33.1	52.9	53.7	42.2	36.4
AEEPS	6.0	5.6	4.8	7.5	6.9	6.8	7.3	6.8	6.4
ASREPS	10.5	7.9	9.3	8.9	14.0	12.0	10.8	8.6	9.8
Variation Coefficient									
ABAPS		0.63	0.53	0.84	0.80	0.74	0.77	0.70	0.73
ABSREPS	1.41	1.33	1.07	1.35	1.45	1.58	1.59	1.38	1.46
AEEPS	0.52	0.46	0.40	0.55	0.56	0.55	0.62	0.63	0.65
ASREPS	0.69	0.56	0.55	0.61	0.73	0.67	0.73	0.71	0.81

Gini Index									
ABAPS		0.29	0.27	0.35	0.31	0.33	0.34	0.33	0.33
ABSREPS	0.56	0.55	0.51	0.57	0.54	0.61	0.62	0.59	0.58
AEEPS	0.26	0.24	0.22	0.26	0.26	0.27	0.30	0.30	0.31
ASREPS	0.34	0.31	0.29	0.32	0.34	0.33	0.35	0.33	0.35

Source: Origial data is from department of finance of ministry of education of the P.R.C. Data in the form is calculated by author based on the forum given in this paper.

APPENDIX 4

Statistical Indices of the Percentage of the Primary School Teachers Who Have Gotten a Senior High School Diploma or Upwards

Indices \ Year	Standard Deviation (%)	Range (%)	Range Rate	Variation Coefficient	Gini Index
1991	8.49	43.25	1.91	0.11	0.056
1992	8.44	43.16	1.88	0.10	0.053
1993	8.58	44.61	1.91	0.10	0.051
1994	9.07	47.56	2.03	0.11	0.051
1995	9.58	51.57	2.17	0.11	0.049
1996	9.34	51.10	2.10	0.10	0.045
1997	8.35	46.17	1.89	0.09	0.038
1998	7.15	39.84	1.67	0.08	0.032
1999	5.80	32.67	1.49	0.06	0.025
2000	4.03	21.30	1.27	0.04	0.019
2001	2.73	11.52	1.13	0.03	0.015
2002	2.14	8.72	1.10	0.02	0.012

Source: Origial data is from information center of ministry of education of the P.R.C. Data in the form is calculated by author based on the forum given in this paper.

APPENDIX 5

Statistical Indices of the percentage of the Primary School Teachers Who Have Earned a Diploma of Junior College or Upwards

Indices	Standard Deviation (%)	Range (%)	Range Rate	Variation Coefficient	Gini Index

Year					
1991	1.20	4.58	6.08	0.42	0.246
1992	1.42	5.58	5.85	0.43	0.248
1993	1.70	7.07	6.82	0.44	0.250
1994	2.09	8.31	6.90	0.45	0.259
1995	2.58	9.87	7.13	0.46	0.266
1996	3.39	13.61	10.24	0.46	0.272
1997	4.52	18.97	13.35	0.46	0.268
1998	5.62	24.82	14.59	0.44	0.260
1999	6.99	32.38	14.76	0.43	0.249
2000	8.81	40.08	12.34	0.43	0.247
2001	11.20	48.70	9.82	0.40	0.230
2002	12.43	52.47	5.98	0.36	0.207

Source: same as Appendix 4

APPENDIX 6

Statistical Indices of the Percentage of the Percentage of the Junior High School Teachers Who Have Gotten a Junior College Diploma or Upwards

Indices / Year	Standard Deviation (%)	Range (%)	Range Rate	Variation Coefficient	Gini Index
1991	12.09	45.82	2.31	0.22	0.125
1992	11.49	42.74	2.07	0.19	0.112
1993	10.60	37.96	1.81	0.17	0.099
1994	9.52	32.86	1.62	0.14	0.084
1995	8.42	29.46	1.50	0.12	0.070
1996	7.32	28.76	1.46	0.10	0.057
1997	6.24	26.42	1.40	0.08	0.045
1998	5.21	21.80	1.30	0.06	0.036
1999	4.41	18.13	1.23	0.05	0.030
2000	4.11	18.54	1.24	0.05	0.027
2001	3.90	16.97	1.21	0.04	0.025
2002	3.56	15.52	1.19	0.04	0.023

Source: same as Appendix 4

APPENDIX 7

Statistical Indices of the Percentage of the Junior High School Teachers Who Have Gotten a College Diploma or Upwards

Indices / Year	Standard Deviation (%)	Range (%)	Range Rate	Variation Coefficient	Gini Index
1991	7.08	29.20	10.89	0.73	0.344
1992	7.34	28.37	9.32	0.71	0.332
1993	7.44	28.49	8.43	0.68	0.320
1994	7.23	28.78	7.33	0.63	0.302
1995	7.57	29.35	6.28	0.63	0.300
1996	7.43	29.44	5.58	0.60	0.288
1997	7.25	30.80	5.90	0.56	0.273
1998	7.67	32.69	6.26	0.55	0.272
1999	8.30	33.85	6.02	0.55	0.276
2000	9.32	36.59	6.06	0.55	0.277
2001	10.47	46.14	6.57	0.53	0.267
2002	11.91	55.13	7.18	0.52	0.264

Source: same as Appendix 4

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